



# NEO FLX S

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NEO FLX 24V 5A FLX S, NEO FLX 24V 10A FLX S

351-248  
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**Abstract**

PCB: CEO3\_uP



## Table of Contents

1. About NEO .....	4
1.1. About translation of this document .....	4
2. Component overviews .....	5
2.1. Component overview .....	5
3. Enclosures .....	5
3.1. Console .....	5
3.2. Mounting .....	6
4. Batteries - placement and connection .....	6
4.1. Connect battery fuse / blade fuse .....	6
4.2. Connection of batteries in FLX S, FLX M and FLX L .....	6
5. Motherboard description .....	7
5.1. Connect in this order .....	7
5.2. Connect alarm on P3 .....	8
5.3. Connect load .....	8
5.4. Connect mains .....	9
5.5. Control alarm limit .....	10
5.6. Fuses .....	10
6. Commissioning - how to start the unit .....	10
6.1. Connect in this order .....	10
7. Alarm displayed on cabinet door .....	11
8. NEO Product Sheet .....	12
8.1. NEO Battery backup with more alarm functions .....	12
8.1.1. Technical specifications .....	12
8.1.2. NEO - Name, article number and e-number .....	12
8.1.3. NEO battery backup for security installations .....	12
8.1.4. Flexibility .....	13
8.1.5. Area of use .....	13
8.1.6. Fixed installation .....	13
8.2. Regulations and certifications .....	13
8.2.1. Requirements that the product meets .....	13
8.3. Expected operating time in the event of a power failure ( with new batteries) .....	13
8.4. Circuit boards - Technical data .....	14
8.4.1. Technical data: CEO 3 .....	14
Control alarm limit with JU2 .....	14
Control alarm limit .....	14
Fuses .....	14
8.5. Power supply .....	15
8.5.1. Power supply - Technical Data LRS-150-24 .....	15
8.5.2. Power supply - Technical Data RSP-320-24 .....	15
8.6. Technical data enclosures .....	16
8.6.1. Enclosures - Technical Data FLX S .....	16
8.7. Link to the latest information .....	16
8.8. Warranty, support, country of manufacture and country of origin .....	17
8.8.1. Warranty .....	17
8.8.2. Support .....	17
Spare parts .....	17
Support after the warranty period .....	17
Questions about product performance? .....	17
8.8.3. Contact us .....	17
8.8.4. Country of manufacture .....	17
8.8.5. Designed and produced by: Milleteknik AB .....	18
8.9. Batteries - recommended, not included .....	18
8.9.1. Batteries are not included they are sold separately .....	18



8.9.2. 14 Ah, 12 V AGM battery .....	18
9. Address and contact details .....	18

## 1. ABOUT NEO

NEO is normally used in security systems where the requirements are higher for more functions, alarm functions, longer backup operating times or when the battery backup is to handle higher loads.

### 1.1. About translation of this document

User manual and other documents are in the original language in Swedish. Other languages may be machine translated and/or not reviewed, errors may occur.



#### **READ THIS FIRST!**

If possible, leave 100 mm of free space.

The system is intended for use in a controlled indoor environment.

Only authorized persons should install and maintain the system.

It is the installer's responsibility to ensure that the system is suitable for its intended use.

Documents accompanying the system must be kept in or in its immediate vicinity.

Ventilation should not be covered. Mains voltage should be disconnected during installation.

All information subject to change.

Upon installation of this product, the installer acknowledges and accepts the limitations of this product as described in this manual.

Instructions original language: Swedish.





## 2. COMPONENT OVERVIEWS

### 2.1. Component overview

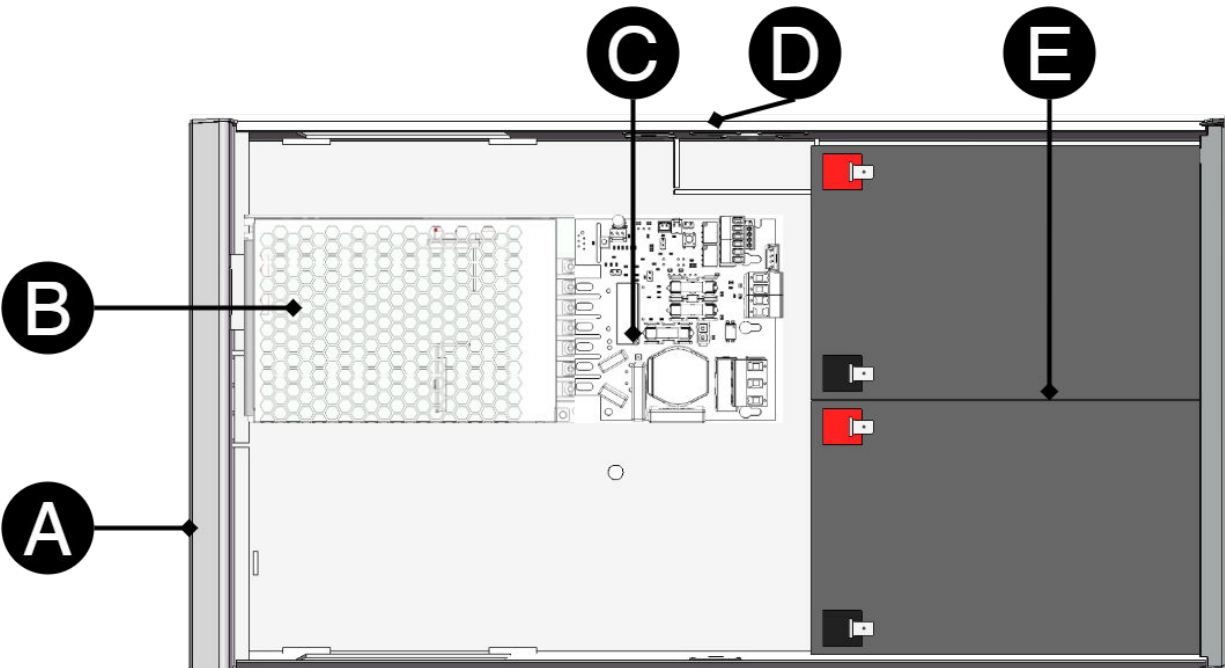


Table 1. Component overview

Number	Explanation
A	Cabinet in black powder-coated sheet metal.
B	The power supply, location and type vary with configuration.
C	Motherboard.
D	Cable entries.
E	Batteries.

## 3. ENCLOSURES

### 3.1. Console

The supplied brackets can be attached in two ways: When mounting on a wall, the brackets must sit backwards, against the wall. When mounting in a 19" rack, the bracket must sit at the front of the unit.

Table 2. Console

No	Explanation
A	Console is pushed in from the bottom up.
B	Clip clicks in when bracket is pushed in correctly.



## IMPORTANT

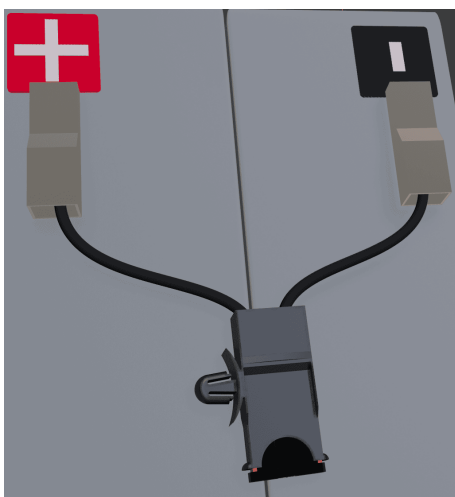
### 3.2. Mounting

Use the appropriate screw for mounting on a wall or in a 19" rack. Screws for mounting on a wall or in a rack are not included.

## 4. BATTERIES - PLACEMENT AND CONNECTION

### 4.1. Connect battery fuse / blade fuse

Figure 1. Fuse holders with blade fuses are connected to + and minus on batteries



### 4.2. Connection of batteries in FLX S, FLX M and FLX L

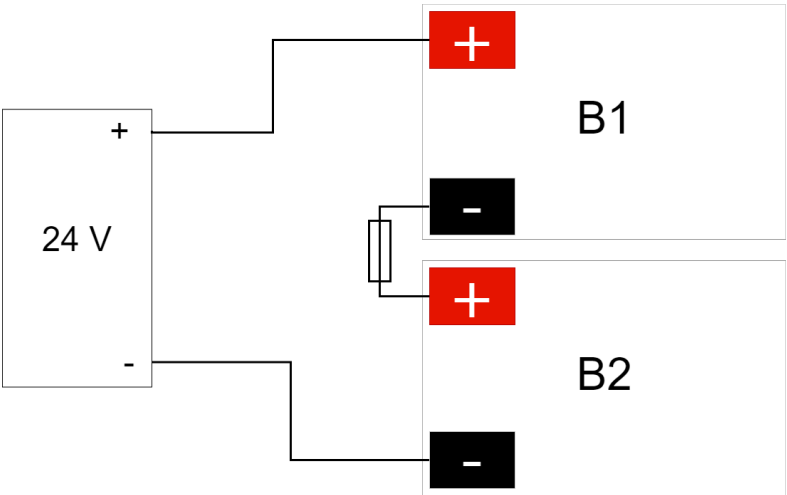
Battery wiring is mounted on the circuit board upon delivery. Pictures below only show how to connect wiring.

1. Place the batteries in the cabinet with the battery terminals facing outwards.
  2. Connect the battery cable. Red cable on + and black cable on -.
- If possible, disconnect mains voltage when replacing the battery.





Figure 2. Wiring diagram for batteries in battery backup



Connect the terminals correctly so that you do not damage the equipment.

## 5. MOTHERBOARD DESCRIPTION

### 5.1. Connect in this order

To minimize the risk of errors that may occur in connection with a short circuit, connections to the motherboard must be made in this order.

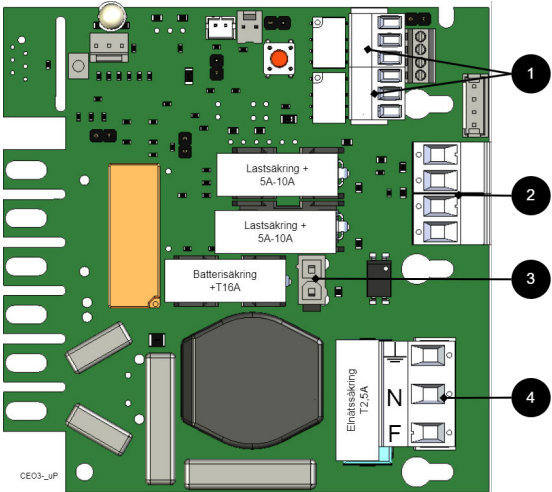
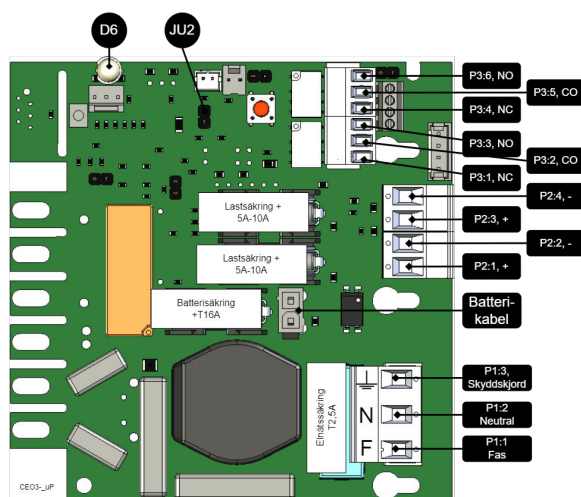


Table 3. Connect in this order

Nr	Explanation
1	Connect alarm.
2	Connect load.
3	Connect batteries
4	Connect mains.



Figure 3. Description: CEO3 uP



On PCB	Explanation
D6	Indicator diode.
JU2	Jumper for alarm control. When the jumper is mounted, the alarm limit is lowered.
P1:1-3	Mains connection, F, N, PE.
P2:1-2	Load output, + / -.
P2:3-4	Load output, + / -.
P3:1-3	Alarm output, NC, CO, NO.
P3:4-6	Alarm output, NC, CO, NO.

## 5.2. Connect alarm on P3

Alarm is connected to terminal P3

Table 4. Connect alarm P3

P3:1-6	Explanation
Sum alarm	
P3:1	NC
P3:2	CO
P3:3	NO
Sum-alarm*	
P3:4	NC
P3:5	CO
P3:6	NO

Total alarm: Broken fuse on load, broken fuse from external distribution board, broken battery fuse, low battery voltage in battery operation, batteries not connected, overvoltage.

## 5.3. Connect load

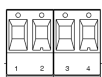






Table 5. Load connections

Circuit board number	Explanation
P2: 1	Connection for load 1 +
P2: 2	Connection for load 1 -
P2: 3	Connection for load 2 +.
P2: 4	Connection for load 2 -.



### MAX CURRENT

The maximum current must not be exceeded. Max current is indicated on [nameplate](#) on the device.



### DANGER

Mains voltage must be disconnected when working with stripped cables. It is the installer's responsibility to ensure that the correct skills are available for connecting 230 V to the unit. Maximum cable area is 4 mm<sup>2</sup>

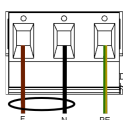
## 5.4. Connect mains

Pull wiring through the cable entry on the cabinet.

If possible, secure the mains cable with cable ties where possible.

Electrical network cabling shall be kept separate from other cabling to avoid EMC interference.

Figure 4. Connect the mains to the motherboard



Connect the mains cable to the terminal before it is put back on the motherboard. Secure F and N with cable ties for electrical safety.

Table 6. Electrical network connections

Letter	Explanation
F	Phase
N	Neutral
PE	Protective earth



### ELECTRICAL MAINS CONNECTION 230 V AC ON CIRCUIT BOARD

Check that the marking on the circuit board matches the cable arrangement on the terminal block.



## 5.5. Control alarm limit

Alarm for low battery voltage in battery operation can be controlled.

By jumpering JU2, the limit for when the unit should give an alarm can be lowered.

Alarms are given when the battery voltage in battery drops below the limit.

Table 7. Low battery voltage alarm limit

Low battery voltage alarm limit	JU2 with jumper <sup>a</sup> .	JU2 without jumper
---------------------------------	--------------------------------	--------------------

<sup>a</sup>The unit is delivered with jumper on JU2

## 5.6. Fuses

Table 8. Fuses.

Unit	Fuse	Type	Explanation
All units	F1	T2,5A	Mains fuse
	F2, F6	T5A	Load fuse +
	F2, F6	T10A	Load fuse +
All units	F7	T16A	Battery fuse



### **WARNING FOR REPLACING FUSES (CURRENT STRENGTH, A)**

There is a risk of damage if the fuse is changed to a larger one than what the unit is delivered with. The function of the fuse is to protect the connected load and cables against damage and fire. It is not possible to change the fuse to a larger one to increase the power output.

## 6. COMMISSIONING - HOW TO START THE UNIT

### 6.1. Connect in this order

To minimize the risk of errors that may occur in connection with a short circuit, connections to the motherboard must be made in this order.



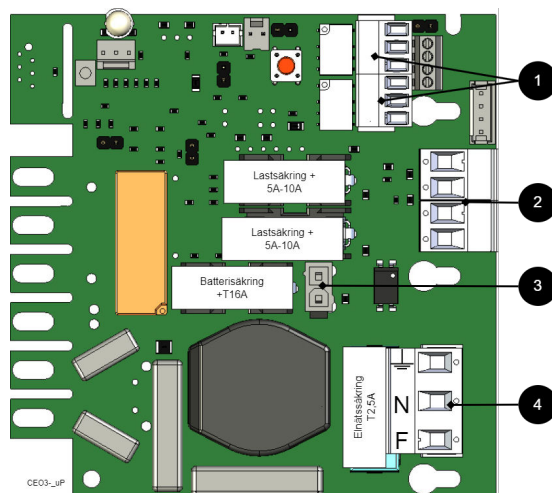


Table 9. Connect in this order

Nr	Explanation
1	Connect alarm.
2	Connect load.
3	Connect batteries
4	Connect mains.

The unit works normally when the indicator LED on the outside of the cabinet door lights up with a solid green light. See front panel for other status indications.

It may take up to 72 hours before the batteries are fully charged.

## 7. ALARM DISPLAYED ON CABINET DOOR

In normal mode, the indicator LED shows a solid green light.



Table 10. The indicator diode shows.

The indicator diode (LED) shows	Explanation
Solid green light	Normal operation.
Slow green flashes	Not available for NEO.



The indicator diode (LED) shows	Explanation
Fast green flashes	Not available for NEO.
Solid yellow light	Mains failure.
Slow yellow flashes	Not available for NEO.
Rapid yellow flashes	Not available for NEO.
Solid red light	Fuse error / charger fault / batteries not connected.
Slow red flashes	Not available for NEO.
Rapid red flashes	Not available for NEO.
No light / off	Deep discharge protection is activated. (System shutdown).

When operating system: If the indicator LED is off, deep discharge protection has come into force.

## 8. NEO PRODUCT SHEET

### 8.1. NEO Battery backup with more alarm functions

Figure 5. NEO FLX S



NEO FLX S is mounted on a wall or in a 19" rack.

#### 8.1.1. Technical specifications

These technical specifications are subject to change without notice.

#### 8.1.2. NEO - Name, article number and e-number

Table 11. Name, article number and email number

Name	Article number	E-number (SV)
NEO 24V 5A FLX S	FS01N10224P050	52 136 92
NEO 24V 10A FLX S	FS01N10224P100	52 136 93

#### 8.1.3. NEO battery backup for security installations

NEO is normally used in facilities where the requirements are higher regarding greater flexibility, more alarm functions, longer backup operating times or when the battery backup needs to handle higher loads. The NEO series offers controlled charging (intelligent charging), which means that when the batteries are fully charged, they will be electronically disconnected for standby mode for up to 20 days or when the batteries have reached 26.7 V (24 V). By discharging the batteries and recharging them continuously (instead of never using them), the system extends the life of the battery by up to 50%. The batteries automatically connect in less than 50 microseconds when needed.



- Battery backup with more alarm functions
- Controlled charging
- Can be supplemented with several optional cards
- Can be used with battery box

#### 8.1.4. Flexibility

NEO FLX S can have an extra battery box. NEO FLX M and NEO FLX L with 1-4 extra battery boxes. NEO FLX M and NEO FLX L with battery shelves in 19 "rack \*. \* The battery boxes and shelves are connected via a 9-pin connector. The battery box has room for up to 2 pcs. 45 Ah batteries per battery box. Battery shelves have room for 2 pcs. 45 Ah batteries (Medium) and up to 2 pcs. 150 Ah batteries (Large) per each battery shelf.

#### 8.1.5. Area of use

NEO supplies power to access systems, alarm systems or other security products in a building that are powered by 24 V DC. The rectifier in the power supply converts 230 V AC down to 24 V DC. Batteries, for example the access system, continue when the power grid goes down. Long life, energy efficient and support is available if something goes wrong, now or in 10 years.

#### 8.1.6. Fixed installation

The product is intended for fixed installation. The battery backup must be installed by a qualified installer.

### 8.2. Regulations and certifications

#### 8.2.1. Requirements that the product meets

Table 12. The product meets the following requirements.

EMC:	EMC Directive 2014 / 30EU
Electricity:	Low voltage directive: 2014/35 / EU
CE:	CE directive according to: 765/2008



#### 8.3. Expected operating time in the event of a power failure ( with new batteries)

System voltage	Number of batteries	Battery type	Unit + battery box *	Load: 2 A	Load: 4 A	Load: 8 A	Load: 10 A	Load: 14 A	Load: 18 A
* Example: 1 + 2 means that there is 1 battery backup with 2 battery boxes connected. 1 + 0 means that it is a battery backup without a battery box.									



## 8.4. Circuit boards - Technical data

### 8.4.1. Technical data: CEO 3

Table 13. CEO3-ECO

Info	Explanation
Article name	CEO3-ECO
Product description	CEO 3 is the next generation circuit board for simpler battery backups. Advanced functions that were not previously possible in simpler battery backups are now available as standard. CEO 3 is manufactured with fewer components than before, which reduces the environmental impact.
Measure	120 x 55 mm x 52 mm
Own consumption	50 mA
Fuses	See table: Fuses.
Outputs	Output: two load outputs.
Insurance	Load output: + secured.
Max load	Maximum load is 10 A per load output (T2A is mounted from the factory) and the card's total load must not exceed 16 A.
Alarm outputs	Alarm outputs: Sum alarm in case of fuse fault, see indication below. Alarm on potential-free relay contact.
Alarm	Sum alarm, Mains failure, fuse failure, charger failure, batteries not connected.
Alarm via	Triggered load securing, potential-free shifting, CO / NO.
Indication	Display showing operating status, alarms and faults. Operating indication: one indication diode per load output +/- . Solid green light = normal operation.

## CONTROL ALARM LIMIT WITH JU2

### CONTROL ALARM LIMIT

Alarm for low battery voltage in battery operation can be controlled.

By jumpering JU2, the limit for when the unit should give an alarm can be lowered.

Alarms are given when the battery voltage in battery drops below the limit.

Table 14. Low battery voltage alarm limit

Low battery voltage alarm limit	JU2 with jumper <sup>a</sup> .	JU2 without jumper
---------------------------------	--------------------------------	--------------------

<sup>a</sup>The unit is delivered with jumper on JU2

## FUSES

Table 15. Fuses.

Unit	Fuse	Type	Explanation
All units	F1	T2,5A	Mains fuse
	F2, F6	T5A	Load fuse +
	F2, F6	T10A	Load fuse +
All units	F7	T16A	Battery fuse





### WARNING FOR REPLACING FUSES (CURRENT STRENGTH, A)

There is a risk of damage if the fuse is changed to a larger one than what the unit is delivered with. The function of the fuse is to protect the connected load and cables against damage and fire. It is not possible to change the fuse to a larger one to increase the power output.

## 8.5. Power supply

### 8.5.1. Power supply - Technical Data LRS-150-24

In:	
NEO 24V 5A FLX S	

Info	Explanation
Output voltage	27.3 V
Output current:	0 A - 6.5 A
Output voltage, ripple	200 mVp-p
Overvoltage	28.8 V - 33.6 V
Voltage recharge, ripple / current limitation	Less than 0.6 Vp-p
Efficiency	89%
Current limitation	110% - 140%
Constant voltage	+/- 0.5%
Regulatory accuracy	+ / - 1.0%
Input current (230 V)	1,7 A
Mains voltage frequency	47 Hz- 63 Hz
Mains voltage	230 V AC - 240 V AC
Brand effect	156 W
Temperature range	-30°C - +70°C
Humidity range	20% - 90% RH non-condensed

The power supply is adapted and calibrated with the battery / hardware of the battery backup. Only power and calibrated power supplies may be used. Contact support when changing power supplies. Use of power supplies coming from another source may cause damage not covered by the warranty. Warranty is canceled if power supplies (from a source other than support / designated by support) that are not correctly calibrated are used.

### 8.5.2. Power supply - Technical Data RSP-320-24

In:	
NEO 24V 10A FLX s	

Info	Explanation
Output voltage	27.3 V
Output current	0 A - 13.4 A
Output voltage, ripple	150 mVp-p
Overvoltage	27.6 V - 32.4 V
Voltage recharge, ripple / current limitation	Less than 1.2 Vp-p
Efficiency	89%



Info	Explanation
Current limitation	105% - 135%
Constant voltage	+/- 0.5%
Regulatory accuracy	+/- 1.0%
Input current (230 V)	2 A
Mains voltage frequency	47 Hz- 63 Hz
Mains voltage	230 V AC - 240 V AC
Brand effect	321.6 W
Temperature range	-30°C - +70°C
Humidity range	20% - 90% RH non-condensed
The power supply is adapted and calibrated with the battery / hardware of the battery backup. Only power and calibrated power supplies may be used. Contact support when changing power supplies. Use of power supplies coming from another source may cause damage not covered by the warranty. Warranty is canceled if power supplies (from a source other than support / designated by support) that are not correctly calibrated are used.	

## 8.6. Technical data enclosures

### 8.6.1. Enclosures - Technical Data FLX S

Info	Explanation
Name	FLX S
Enclosure class	IP 32
Measure	Height: 222 mm, width 437 mm, depth 145 mm
Height units	5 HE
Mounting	Wall or 19 "rack
Ambient temperature	+ 5 ° C - + 40 ° C. For best battery life: + 15 ° C to + 25 ° C.
Environment	Environmental class 1, indoors. 20% ~ 90% relative humidity
Material	Powder coated sheet
Color	Black
Cable entries, number	4
Batteries that fit	2 pcs 7.2 Ah or
Place for fan	Yes

## 8.7. Link to the latest information

Products and software are subject to updates, you will always find the latest information on our website.

[NEO](#)







## 8.8. Warranty, support, country of manufacture and country of origin

### 8.8.1. Warranty

The product has a two-year warranty, from the date of purchase (unless otherwise agreed). Support during the warranty period can be reached at [support@milleteknik.se](mailto:support@milleteknik.se) or telephone, +46 31-34 00 230. Compensation for travel and / or working hours in connection with locating faults, installing repaired or replaced goods is not included in the warranty. Contact Milleteknik for more information. Milleteknik provides support during the product's lifetime, however, no later than 10 years after the date of purchase. Switching to an equivalent product may occur if Milleteknik deems that repair is not possible. Support costs may (at Milleteknik's discretion) occur after the warranty period has expired.

### 8.8.2. Support

Do you need help with installation or connection?

You will find answers to many questions at: [www.milleteknik.se/support](http://www.milleteknik.se/support)

Phone: +46 31-340 02 30

Support is open: Monday-Thursday 08:00-16:00, Fridays 08:00-15:00. Closed 11:30-13:15.

### **SPARE PARTS**

Contacted support for questions about spare parts.

### **SUPPORT AFTER THE WARRANTY PERIOD**

Milleteknik provides support during the life of the product, but no longer than 10 years after the date of purchase. Replacement for an equivalent product may occur if the manufacturer deems that repair is not possible. Costs for support and replacement are added after the warranty period has expired.

### **QUESTIONS ABOUT PRODUCT PERFORMANCE?**

Contact sales: 46 31-340 02 30, e-mail: [sales@milleteknik.se](mailto:sales@milleteknik.se)

### 8.8.3. Contact us

Milleteknik AB

Ögärdesvägen 8 B

S-433 30 Partille

Sweden

+46 31-34 00 230

[www.milleteknik.se](http://www.milleteknik.se)

### 8.8.4. Country of manufacture

Country of manufacture / country of origin is Sweden. For more information, contact your seller.



### 8.8.5. Designed and produced by: Milleteknik AB

Designed and produced by Milleteknik AB

## 8.9. Batteries - recommended, not included

### 8.9.1. Batteries are not included they are sold separately

Batteries are sold separately.

### 8.9.2. 14 Ah, 12 V AGM battery

Fits in	Number of batteries	
Battery type	V	Ah
Maintenance-free AGM, lead-acid battery.	12 V	14 Ah

Table 16. 10+ Design life \* battery

Article number	E-number	Article name	Terminal	Measure. Height width depth	Weight per piece	Make
MT113-12V14-01	5230537	UPLUS 12V 14Ah 10+ Design Life battery	Flat pin 6.3 mm	151x98x101 mm	4.2 kg	UPLUS

\*Design life is the shelf life in years for an unused battery. Environmental factors such as heat and load affect the service life. Batteries that have a durability (+10 Design Life) of 10+ years usually need to be replaced after 5-6 years.

## 9. ADDRESS AND CONTACT DETAILS

Milleteknik AB  
Ögärdesvägen 8 B  
S-433 30 Partille  
Sweden  
+46 31 340 02 30  
info@milleteknik.se  
www.milleteknik.com

The article number of this instruction:



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